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# Small Schools: How Effective Are the Academics?

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# Small Schools: How Effective Are the Academics?

**T**he North American Division's 2013 school-opening report showed that out of 838 K-12 Seventh-day Adventist schools, 490 (58.5 percent) are small schools, with only one, two, or three teachers, multigrade classrooms, and no full-time principal. Even in schools with four or more teachers, it is common to find multigrade classrooms.

## Two Perspectives on Small Schools

Can small schools with multigrade classrooms be as effective in fostering achievement as larger schools with single-grade classrooms? This is a concern of many parents who are considering

sending their children to the small local Adventist school. To illustrate two points of view related to small schools, consider the following perspectives: a teacher in a small Adventist school and a parent of a child who is a potential student in a small Adventist school.

### A Teacher's View

Julia<sup>1</sup> is the only teacher at her school, with 13 students in grades 1 to 5. Julia loves teaching in a multigrade situation. Her classroom is alive with students bustling around, actively engaged in many kinds of individual and group activities.

Julia uses a variety of teaching strategies in her classroom. She frequently pairs her older students with the younger ones to work on projects

together or has the older students tutor or mentor the younger ones. For example, when younger students were first learning the math computer program ALEKS, which individualizes learning for each student, older students assisted the younger ones in navigating the program. The students love working together. Julia uses documents, kits, and other materials prepared by the North American Division that help her deliver a concept to the whole classroom while providing ideas and opportunities for differentiating instruction at each grade level. Parents are frequently engaged in the classroom activities to assist Julia in working with groups of stu-

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dents. “There’s no other way to teach,” Julia says, as her face lights up.

### A Parent’s View

Kathy,<sup>2</sup> a Seventh-day Adventist parent, has enrolled her 3rd grader and 5th grader in the local public school. She is very concerned about the education of her children and is not sure whether the small Adventist school in her town can ensure that they reach their potential.

The two-teacher Adventist school in Kathy’s town has 25 children and is fully supported by the church. If Kathy sent her two children to this school, there would be three other 3rd graders and one other 5th grader in their classes. While Kathy has expressed concern about the quality of education at the school to her friends, she has never visited the school or asked about the average achievement level of the students. Kathy’s rationale for choosing to send her children to the local public school is that she does not want them to be disadvantaged academically by attending a school with inadequate facilities. She also believes that the support provided by her family and the church is sufficient to care for the spiritual growth of her children. Kathy’s concerns are understandable, but are her assumptions about small schools justified? Let’s look at the research.

### Achievement in Small Schools

The CognitiveGenesis Project,<sup>3</sup> with its extensive collection of data, has analyzed this issue of the effectiveness of small schools. Each September from 2006 to 2009, every student in grades 3 to 9 and 11 in all Seventh-day Adventist schools in the North American Division took nationally recognized standardized achievement and ability tests. The tests

used in Canada were different from, but similar to, those used in the United States and Bermuda, where the Iowa Tests of Basic Skills and Iowa Tests of Educational Development (Iowa Tests) were used to measure achievement, and the Cognitive Abilities Test was used to measure ability. The research reported in this article used only data from the students in the United States and Bermuda because it was not appropriate to com-



bine the results of the different tests used in the various countries.

More than 50,000 students were tested in the United States and Bermuda during this four-year period. In addition, from 2010 to 2012, more than 25,000 students from the same locations were tested each year in grades 3 to 12 using the same tests as those used in 2006 to 2009, and the data for all seven years were merged to form a database of more than 75,000 students. This huge database was used by CognitiveGenesis researchers to compare the achievement of students in Adventist schools of different sizes and to compare students in multigrade classrooms with those in single-grade classrooms.

Rather than just comparing two

groups (large and small schools or multigrade and single-grade classrooms), the researchers compared students in classrooms of many types, based on six characteristics that are associated more with multigrade classrooms than with single-grade classrooms:

- Schools with multigrade classrooms usually have fewer students;
- Schools with multigrade classrooms usually have fewer teachers;
- Multigrade classrooms usually have fewer students in each classroom;
- Multigrade classrooms usually have fewer students in each grade;
- Multigrade classrooms frequently have students in three or more different grades; and
- Multigrade classrooms frequently have a wide range of grades (e.g., 1 to 4, 5 to 8, 1 to 8).

CognitiveGenesis studied the effect of the type of school or classroom on achievement using six different ways to categorize schools or classrooms:

- by the number of students in the school;
- by the number of teachers in the school;
- by the number of students in the classroom;
- by the number of students in the grade;
- by the number of grade levels in the classroom; and
- by the range of grade levels in the classroom.

Many of the differences in achievement between students in schools and classrooms that differed based upon these six characteristics were not statistically significant, but when differences were found, they were generally small

and usually in favor of school or classroom types found in small schools. The advantages of school or classroom types found in small schools were generally consistent across gender, grade level, and ability level.

An extensive report of the analyses using CognitiveGenesis data from 2006 to 2009 comparing students varying on all six classroom/school characteristics listed above gave consistent results across all six characteristics. The results reported in this article are for data from 2006 to 2012 using only analyses for one of the six classroom/school characteristics: a comparison of achievement for students with differing numbers of students in their grade. Results were similar for all six characteristics.

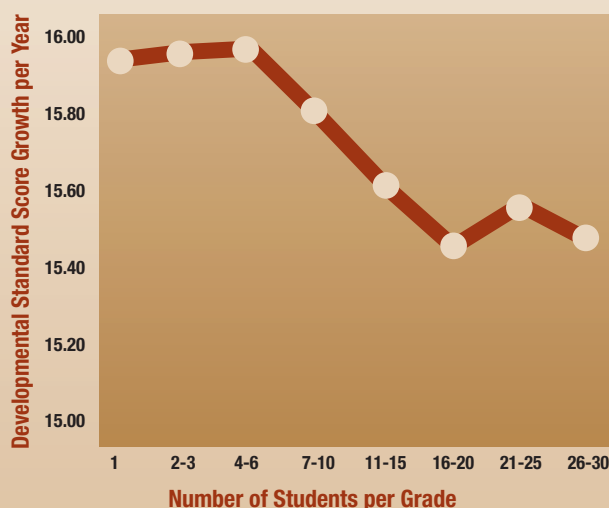
For all students enrolled in Adventist schools in the U.S. and Bermuda tested in two consecutive years from 2006 to 2012 and who remained in grades 3 through 8 in the same school, both years were used for this analysis. Their achievement was measured by their one-year change on the composite score of the Iowa Tests. In this article, the one-year change will be called “achievement growth.”

For the analysis reported here, one-year achievement growth data was available for 59,604 students. Students were sorted into eight groups based upon the number of students in their grade at the school: 1, 2 to 3, 4 to 6, 7 to 10, 11 to 15, 16 to 20, 21 to 25, and 26 to 30 students. The group with one student per grade was the smallest. For each year when testing was done (2006 to 2012), about 450 students were the only pupil in their school in that grade. Over the seven years of testing, there was one-year achievement growth data

**Figure 1a**  
Developmental Standard Score Achievement Growth  
by Number of Students per Grade<sup>4</sup>

Students Per Grade	N(umber)	Growth/Year
1	2,595	15.93
2-3	8,408	15.96
4-6	11,352	15.98
7-10	11,312	15.79
11-15	10,501	15.62
16-20	6,901	15.48
21-25	5,648	15.57
26-30	2,887	15.47
Total	59,604	15.75

**Figure 1b**



available for 2,595 students who were the only student in their grade. There were 11,352 students in the largest group, with 4 to 6 students per grade.

The best score to measure achievement growth reported by the Iowa Tests is the developmental standard score. For students in grades 3 to 8, developmental standard scores ranged from a low of 125 to a high of 364. The changes in developmental standard scores for students testing at the 50th percentile each year in the Iowa Tests norm group ranged from 15 points between grades 3 and 4 to 11 points between grades 7 and 8, with an average change per year of 13.6 developmental standard score points.

The development standard score change (achievement growth) over one year for all students in the Adventist schools studied was 15.75 points, well above the change in the norm group.<sup>5</sup> The one-year achievement growth for Adventist students was much greater than the growth of students in the norm group, no matter how many students were in their grade. The one-year achievement growth for the eight groups was very similar, with students having fewer students in their grade generally achieving slightly higher growth than those with more students in their grade. The table and graph (Figures 1a and 1b) show the composite developmental standard score growth in achievement for the eight groups.

Additional analyses found that controlling for differences in home background or teacher background between the eight groups did not change the results. All analyses done indicated that one-year achievement growth for students with few pupils in their grade (multigrade classrooms/small schools) were very similar to the one-year achievement growth for those with many students in their grade (single-grade classrooms/large schools). The small differences found favored multigrade classrooms/small schools.

### School Size Research in the Professional Literature

Results from three types of studies in the professional literature relate to the question of the value of small schools and multigrade classes: research studying (1) multigrade classrooms, (2) small schools, and (3) small classes. The conclusions of research on small schools and small classes in the



larger community are not directly relevant to Adventist schools, as their definition of small schools would include even the largest Adventist schools, and their definition of small classes would include the vast majority of classes in Adventist schools. However, research results in all three types of studies are consistent with the findings of the CognitiveGenesis analysis, showing that multigrade classes, small classes, and small schools are *equal to or superior in achievement* to single-grade classes, large classes, and large schools.

Historically, few studies have specifically addressed student achievement in Adventist multigrade schools. For example, a meta-analysis of 56 studies by Veenman<sup>6</sup> found that there were no

consistent differences in achievement between multigrade and single-grade classes. Chingos<sup>7</sup> found few high-quality studies of the relationship between class size and achievement between 1979 and 2012, but he stated that most of the studies in his meta-analysis found “at least some evidence of positive effects of smaller classes.”

Two earlier studies compared Adventist multigrade and single-grade classes. Steve Pawluk<sup>8</sup> found no statistically significant differences in achievement between students in multigrade and single-grade Adventist classrooms in the northwest United States. In her dissertation using preliminary data from the first two years of CognitiveGenesis (2006 and 2007), Denise White<sup>9</sup> found only small differences between multi-

grade and single-grade classes, with differences in favor of multigrade classes.

### **Multigrade Classrooms: Boon or Bane?**

So, what can we tell parents and church members who express concern about the achievement of students in small Adventist schools in the United States and Bermuda? Are small schools with multigrade classrooms really a weak component of the Adventist education system, or are they an asset to our denomination?

Research using CognitiveGenesis data clearly suggested that yearly achievement growth in multigrade classrooms at Adventist small schools in the U.S.



**What can we tell parents and church members who express concern about the achievement of students in small Adventist schools?**

and Bermuda was larger than achievement growth in the norm groups and also that achievement growth was at least as large as and possibly slightly greater than achievement growth in single-grade classes. These findings are consistent with those of numerous studies in the professional literature.

Multigrade classrooms in small schools typically have many disadvantages, such as no full-time administrators and a lack of excellent facilities. But educators familiar with multigrade classrooms suggest that the advantages of these classrooms more than make up for the disadvantages. For example, since the number of group experiences must be reduced due to the wide range of grade levels in the multigrade classroom, the teacher must put more emphasis on setting individual objectives for each student and fostering self-directed learning. One of the most powerful teaching methods, which is ideally suited to the multigrade classroom, is peer-to-peer tutoring and mentoring. Kahn<sup>10</sup> claims that this strategy is the “central advantage of the age-mixed [multigrade] classroom.”

### Outcomes Other Than Academics

But what about growth in areas other than academics? Few studies have examined the effects of small schools on areas other than academics, with social skills being the most common non-cognitive outcome studied. For example, Kelly-Vance, Caster, and Ruane<sup>11</sup> in a study of four Midwestern U.S. schools found that students in multigrade schools had higher social skills than pupils in single-grade schools. Also, an area where research is needed is the relationship of spiritual development to school size in denominational schools.

### Conclusion

The CognitiveGenesis findings related here are consistent with findings of other researchers, which concluded that achievement growth in multigrade classrooms and small schools was as high as or slightly higher than achieve-

ment growth in single-grade classrooms and large schools. Research also suggests that multigrade classrooms have advantages in other areas as well, such as social development.

Multigrade environments reflect the reality of our complex world, where old and young work together, where teamwork is essential, and where variety can be a creative opportunity rather than an obstacle. In the end, it is not about large versus small but about teachers who incorporate not only best practices, but maintain a safe, spiritual, and enriching environment that empowers our students to take responsibility for their own learning. All this occurs within a church school system that has a built-in “academic edge” with both its multigrade and single-grade classrooms. ✍

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1. Pseudonym—real person.
2. Pseudonym—real person.
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4. This table includes all students tested in CognitiveGenesis from 2006-2009 who were tested two consecutive years, allowing us to compute a “growth” score for these students.
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